

ABSTRACT

A stirring method provides overall stirring of metal over a metallurgical length, thereby ensuring both thermal and chemical uniformity between a top and bottom of a liquid pool without correspondingly being deprived of beneficial effects specific to stirring in a mold and in a secondary cooling zone respectively, and without disturbing, but rather stabilizing, local flow mode in the mold. During a continuous slab casting operation, in which molten metal is introduced into a mold via a submerged nozzle having lateral discharge outlets opening towards narrow faces, a stirring uses moving magnetic fields that act, in pairs, at least in a secondary cooling zone of a casting plant, by travelling collinearly between them in opposite directions so as to forcibly establish a middle longitudinal circulation in the liquid pool as two opposing collinear streams, which produce a global movement in the form of a "four-leaf clover", the upper lobes of which extend into the mold to near discharge jets coming from outlets of the nozzle, brake the jets or accelerate them, as required.